2.1 Federal Council for Science and Technology

The explosive growth of science and technology in the Federal government which took place after World War II was part of a trend which foreshadowed that science and technology would for the foreseeable future generate challenges, needs, issues and opportunities for the nation. For better or worse, but hopefully for the best, the United States had cast its lot for a science and technology future to drive the engines of society and serve its multiplying needs. Each of the major Federal agencies was determined to employ the tools of science and technology in the accomplishment of its mission. The Military Services recognized that through science and technology it would be possible to compensate for the lack of numbers of soldiers, sailors, airmen and marines by increasing the mobility, the fire power, the communications, and the information-gathering power of the armed services. Other agencies also recognized that science and technology would have a similar effect on agriculture, health, housing, education, space exploration, and the like.

It was also recognized that the achievement of national goals and objectives called for a combined effort, beyond the responsibility of a single agency, but more achievable by the combined action of all of them. This meant that there was a need for the kind of policy formulation and cooperative programs in the laboratories of the Federal government, the universities and of industry, since all of these sectors were involved in common purpose. Coordination became an important requirement at a level above the Federal agencies. To achieve this, a special administrative apparatus was created in the Executive Office of the President. It entailed a Special Assistant to the President for Science and Technology, who was also the Chairman of a new President's Science Advisory Committee (PSAC), which was made up of eminent scientists and engineers from the private sector. One of the first recommendations of PSAC was the creation of a new group, which would be composed of the top science and technology managers of the major Federal R&D agencies. This recommendation was accepted by the President and on March 13, 1959, Executive Order 10807 established the Federal Council for Science and Technology. The Special Assistant to the President for Science and

Technology was also the chairman of the Federal Council for Science and Technology (FCST). The last part of the White House science and technology apparatus, the Office of Science and Technology (OST), was established in 1962 by Executive Order to provide more adequate staff resources for all of these functions.

The approach towards a White House Science and Technology mechanism was both practical and brilliant. The Science Advisor to the President, as the chairman of both PSAC and FCST, had at his command a powerful team of experts from the private sector and from the government sector to provide assistance, advice, coordination and direction. In the early years, the FCST was fortunate to have excellent Executive Secretaries such as Dr. Edward Wenk and Dr. Charles V.Kidd to assist Dr. Donald Hornig, the Science Advisor and Director of the Office of Science and Technology. Both of these public servants were knowledgeable in government processes, management of research and development matters, and the coordination skills. Their tasks were made easier by the quality of the representatives from the agencies. In 1964, for example, the Council members were, in addition to Dr. Hornig, Harold Brown (DOD), Nyle C. Brady (USDA), J. Herbert Hollomon (DOC), Edward W. Dempster (DHEW), John C. Calhoun (DOI), Glenn T. Seaborg (AEC), Leland J. Haworth (NSF), and James E. Webb (NASA). Official observers included: N.E. Halaby (FAA), Edwin J. Kretzmann (DOS), and Elmer B. Staats (BOB). [1] In addition to working with the Federal agencies through FCST, the Science Advisor interacted directly with each of the Federal R&D leaders. On occasion, he headed an informal group that addressed such issues as the total effect of funding research and development in universities and how the Federal agencies could help by means of their research programs. FCST also participated in the budget process in a most useful way.Early in each calendar year, the committees of FCST would prepare analyses in particular areas where more than one agency was involved, areas such as atmospheric sciences, water resources and oceanography. These analyses

[1] Office of Science and Technology, Executive Office of the President, The Role of the Federal Council for Science and Technology, Report for 1963 and 1964. Washington, D.C., pp 53.

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helped identify emerging issues and possible projects where duplication and overlap were visible. The data that the FCST produced was used by OST, which assisted the Bureau of the Budget (now the Office of Management and Budget) in the prepartion of agency budgets, to provide advice on scientific merit and project urgency. Since BOB was also present during FCST meetings, the close interaction between FCST and that group made for deeper understanding and better management of Federal funds and other resources. It also made it possible for the Science Adviser who was called upon to testify before several congressional committees to be well informed, more authoritative, and more valuable to the congressional committees in their review of agency research and development programs.

The Executive Order 10807,detailed the responsibilities of FCST as follows:[1]

a. The Council shall consider problems and developments in the field of science and technology and related activities affecting more than one agency or concerning the overall advancement of the Nation's science and technology, and shall recommend policies and other measures (1) to provide more effective planning and administration of Federal scientific and technological programs, (2) to identify reseatch needs including areas of research requiring additional emphasis, (3) to achieve more effective utilization of the scientific and techological resources and facilities of the Federal agencies, including the elimination of unnecessary duplication, and (4) to further international cooperation in science and technology. In developing such policies and measures, the Council, after consulting, when considered appropriate by the Chairman, the National Academy of Sciences, the President's Science Advisory Committee, and other organizations, shall consider (i) the effects of Federal R&D policies and programs on non-Federal programs and institutions, (ii) long-range program plans designed to meet the scientific and technological needs of the Federal government, including manpower and capital requirements, and (iii) the effects of non-Federal programs in science and technology upon Federal R&D policies and programs.

b. The Council shall consider and recommend measures for the effective implementation of Federal policies concerning the administration and conduct of Federal programs in science and technology.

c. The Council shall perform such other related duties as shall be assigned, consonant with the law, by the President or by the Chairman.

d. The Chairman shall, from time to time, submit to the President such of the Council's recommendations or reports as require the attention of the President by reason of their importance or character.

It should be recognized that other parts of the Federal government were concerned with the planning of Federal R&D (for example, the National Science Foundation), but

[1] Ibid, Appendix A, p. 31

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FCST was able to approach various problems and issues as an interagency group that added a dimension not otherwise available. It was a forum for the discussion of cross-agency problems, and a two-way channel to carry messages from the agencies to the President and vice versa. What the FCST was able to do most successfully was to provide a way that Federal agencies could arrive at a consensus without the need for new directives and other formal paperwork. By reaching consensus on broader issues, FCST was in a way a voluntary decision-making group. During the decade of the 1960s, FCST had as many as 150 scientists and administrators directly involved in the programs of its committees. Its subcommittees and panels operated with about 300 persons. Except for a few people from the OST staff, all of this cast came from the Federal agencies, working on a part time basis. The cooperation and coordination attained by FCST was extraordinary during the 1960s, reaching a height not equalled since.

At the time the FCST report for 1963 and 1964 was written, FCST listed 13 committees, most of them ad hoc in nature. Titles and chairmen are listed to give the reader an understanding of what FCST was interested in during that period: [1]

Standing Committee (Allen V. Astin, National Bureau of Standards, DOC)
International Committee (Edwin M. Kretzmann, Department of State)
Committee on Long-Range Planning (Harvey Brooks, Harvard University)
Interagency Committee on Oceanography (Robert Morse, Navy)
Interdepartmental Committee on Atmospheric Sciences (J. Herbert Hollomon, DOC)
Coordinating Committee on Materials R&D (Robert L. Sproull, ARPA)
Technical Committee on High Energy Physics (Randal M. Robertson, NSF)
Committee on Natural Resources (John C. Calhoun, Department of Interior)
Committee on Scientific and Technical Information (William J. Ely, Department of Defense)
Committee on Water Resources Research (Ray K. Linsley, OST)
Committee on Scientific Personnel (Allen V. Astin, National Bureau of Standards)
Committee on Behavioral Sciences (Henry W.Riecken, National Science Foundation)
Patent Advisory Panel (William Eaton, Department of Commerce)

Another committee, the Committee on Transportation Research) was dissolved when Department of Commerce took on the direct responsibility for this function.

[1] Ibid, p. 49.

In mid-1973, the Director of the National Science Foundation became the part-time Science Advisor to the President. This shift was made with the decision of the President to move the science apparatus out of the White House. The new chairman of FCST was Dr. H. Guyford Stever. He continued in this role until Public Law 94-282 was passed on May 11, 1976 establishing a new science and technology mechanism in the White House. Title IV, P.L. 94-282, created the Federal Coordinating Council for Science, Engineering, and Technology. With the creation of this Council, FCST passed into history. At the time of its demise, FCST had 14 committees in action. A list of the names and chairpersons of the committees is shown below to give the reader a glimpse of what R&D programs were considered important a decade later. [1]

Interagency Arctic Research Coordinating Committee (Robert H. Rutford, NSF)
Interagency Coordinating Committee on Astronomy (Robert E. Hughes, NSF)
Interdepartmental Committee on Atmospheric Sciences (Edward P. Todd, NSF)
Committee on Domestic Technology Transfer (Alfonso B. Linhares, DOT)
Interagency Committee on Excavation Technology (William B. Schmidt, DOT)
Committee on Federal Laboratories (Ernest Ambler, NBS-DOC)
Committee on Food Research (Robert W. Long, DOA)
Committee on Government Patent Policy (Betsy Ancker-Johnson, DOC)
Interagency Task Force on Inadvertent Modification of the Stratosphere (Carroll Leslie Bastian, NSF, and Warren Muir, CEQ)
Ad Hoc Committee on the International Geodynamics Project (James R. Balsley, DOI)
Interagency Committee on Marine Science and Engineering (Robert M. White, NOAA-DOC)
Committee on Materials (William L. Fisher, DOI)
Interagency Committee on Social Research and Development (William A. Morrill, HEW)
Committee on Water Resources (Sherman Gillam, DOI)

The only surviving programs from the 1963-1964 list dealt with atmospheric sciences, materials R&D, water resources, patent policy, and oceanography (marine sciences). Gone were the standing committee, the international committee, long-range planning, high energy physics, natural resources, scientific personnel, behavioral sciences, and most important in consideration of the focus of this book, scientific and technical information.

[1] Executive Office of the President, Office of Science and Technology Policy, Activities of the Federal Council for Science and Technology and the Federal Coordinating Council for Science Engineering and Technology, Report for 1975 and 1976, Washington, D.C., pp 71

One indicator of the difference in attitude displayed by the leaders of science and technology in the White House during the late 1950s and early 1960s is seen in the proceedings of a symposium held by the Federal Council for Science and Technology in 1964 on technical information and the Federal laboratory. [1]

The program was undertaken by Dr. Edward Wenk, Jr., Dr.J. Hilary Kelley, the first full-time information expert on the OST staff, and William L. Hooper, and OST technical assistant, who was responsible for much of the staff work in setting up and operating the syposium. It was the Science Advisor's decision that the Office of Science and Technology undertake a series interagency conferences for laboratory directors as an experiment toward improving two-way communication between top policy levels and the local managers who direct the Goverment's R&D on a day-to-day basis. The first conference dealt with personnel policies affecting the government laboratory in October 1963. So important did the Science Adviser consider scientific and technical information as an issue and an opportunity for improved laboratory performance, that he chose STI for the second theme. This reflected the reality that there were few occasions in the overall Federal government field that congressional and White House consensus developed on meeting a challenge. Congress bristled with endeavors based on its conclusion that STI actions in the Federal R&D establishment needed express action. The White House and senior government R&D leaders agreed. The Federal Council as did the Science Advisor set out to implement the program. It was obvious during this period that most of the Federal agency R&D managers and their staffs were not completely ready psychologically to change the way information was (or was not) handled in their organizations. The FCST symposium was a device to accelerate the process. Said Dr. Hornig in his Foreword:

> There should be no doubts about the importance that my office attaches to efforts to improve technical communication within the Government and between the Government agencies and the public. I recommend that every R&D administrator, every technical manager, and every scientist and technical manager, and every scientist and technical person in the Government analyze his own technical information role and with the help of this volume, make an effort to improve his capabilities in this regard. No simple answer is provided to the complex questions that are raised.

[1] Federal Council for Science and Technology, Technical Information and the Federal Laboratory, Proceeedings, Second Symposium, Building 3, Auditorium, Goddard Space Flight Center, Greenbelt, MD, April 13-14, 1964, pp 88.

> However, the insight and experience reported in this conference should provide useful leads to those who wish to deal with technical information problems at their own installations.

In his concluding remark, Dr. Hornig deftly placed into context the obvious limitation of what an organized Federal STI program could or could not accomplish.

> Some progress can be made in the STI field by developing sound Governmentwide policies and programs. But primary responsibility lies with the individual laboratory director and his senior scientist. Here is where innovation and experiment can return the greatest dividends. It is my sincere hope that this conference has accelerated the process of appraising which methods should be employed in the production, dissemination and use of STI for improving the overall performance of the Federal laboratory.

What Dr. Hornig left unsaid at that time largely perhaps he was convinced that his office had triggered off a program that would continue to require active, sound government-wide STI policies and programs was that the road ahead was not clear and uncluttered. Each Administration would have to rededicate itself, the Executive Office of the President and the agency R&D leadership, anew to the crusade. Unfortunately, this was not said and the drive began to taper off a few years later.

The symposum as chaired by Dr. Allen V. Astin, who was also at that time a member of FCST. Highlights of his introductory speech are provided:

> Our first symposium dealt with current problems in the administration of scientific personnel. At that symposium a number of topics were suggested for the second symposium. The Standing Committee of FCST, which I chair, decided that the topic scientific and technical information and the Federal laboratory would be most timely and important. The relationship of communication to scientific progress and to the application of science to meet human needs is so fundamental that there is little need to justify the importance of this topic. The timeliness is largely a result of recent actions and studies by PSAC and by the Congress. The topic has been of concern to the users and originators of scientific information, the manipulators of scientific information, and Government officials both in the executive and legislative branches as well as the public at large. Activities of FCST's Committee on Scientific Information in recent months have reached a stage where we feel that a discussion of some of the things that they have done will be of great interest to you. Instead of focusing on what the information managers have to say, we are concentrating, rather than on the middle, primarily on the two ends of the spectrum - that is, people who originate STI and the users of STI. We will look at this problem from the point of view of the laboratory manager, who bears a responsibility for making available information which is important to the work of this scientific staff and for taking managerial steps to feed into the communication stream the results of his activities in his own laboratory. There are three speakers who will approach the subject of needs as seen by laboratory leaders: Alvin Weinberg, Director of the Oak Ridge National Laboratory, Derek Price of Yale University, and Dr James Shannon, Director of NIH.

> DR. WEINBERG: I think I sense the frustration that each of us feels because of the Information crisis. As Chairman of the previous President's Science Advisory Panel on Science Information which published the report: "Science, Government and Information, I want to tell you about the central role that the panel envisages for the big laboratories in the process of information transfer. I will also discuss the information center and the big laboratory, and finally, what I call "Project Literacy" an attempt to get scientists and technologists to use the mother tongue more efficiently.
>
> What does the laboratory managers do that makes a difference beyond the obvious things like maintaining moral,maintaining standards, even setting the program? I am increasingly convinced that one of the most important functions of the central management of a big research laboratory is to control and encourage the proper flow of information among the staff of the establishment. Management must find out what is going on, and it must direct the proper flow of information channels where it will do the most good. This represents one essential difference between a collection of individual researchers, which as is found in a university, and researchers in a coordinated laboratory.The laboratory managers is therefore responsible for encouraging proper interaction between seemingly disparate parts of his empire. This is not an easy matter.

Weinberg explained this by relating how frustrated he was when attenting a national meeting of,say,the American Nuclear Society to hear two people from his laboratory argue publicly about a matter that neither knew the other was working on. He then talked about the specialized information center as a major key to the rationalization of our information system. In the view of his Panel, this center:

> will become the accepted retailer of information, switching, interpreting, amd otherwise processing information from the large wholesale depositories and archival journals to the individual user. ..It would be a technical institute, not a technical library, manned by peope versed in the art who are experts and continue to maintain a specialized expertise. They would be served by librarians, but would themselves not be not be libraries. The Panel believes that the large Government or quasi-Government laboratories would make a congenial home for clusters of such centers.

Addressing the subject of fragmentation of information handling in special fields, he stated that his Panel concluded that there is a need for a delegated agent. It agreed that it made sense to do research in a pluralistic way, but the information activities associated with the field of research should all be centered in a single place, since research results are relevant to a single purpose regardless who is paying for the research. This is a matter that COSATI should look at more thoroughly. His last point dealt with a related subject, the deteroration of the English style used by American technical people This is becoming and "impedence" in the transfer of information He asked what good are fancy retrieval systems is reports are the weak link. After giving examples of the problem and what his laboratory has tried to do to remedy it, he

with the advice that each laboratory director should sponsor his own "Project Literacy" campaign.

Dr Price addressed the subject: Ethics of Scientific Publication. Price pointed out that the information explosion seems to be the cause of problems in scientific publication, and that the proliferation is attributable to the increased involvement of government in science matters. In his view, there is now a searching inquiry to the issue. In his view we live with assumptions about the perfection of the science communication process today that do not seem to be accurate. In regard to the literature, he points out that the greater part of what is available includes material "from which the juice has already been well squeezed by prior informal communication, by word of mouth, by preprinting, and by a host of techniques that have been increasing mightily in the past decade." The technologies of transportation, the telephone, and the newspaper have begun to substitute for the scientific paper. This has increased the efficiency (of science communication) but it has been at the expense of a certain amount of the openness of the literature. He asserts:

> The immortality of the record appears to be weaker that had been supposed. It can be shown, from network analysis of scientific literature, that only a small part of the literature has a usefulness that lasts after the intense localized research front has passed it by. Some papers from the research front and others not belonging to it do become part of a long-term, archive, but it seems clear that by far the greater number of published works do not. Part of the reason is that they do not merit it , but the greater part of the reason seems to be that they were not designed for it. The greater number of papers are published for one's coeval peers rather than for the unseen audience of the immortals.

Price then addressed the subject of freedom to publish, whether one is free and entitled to publish all findings, especially in the area of national security. His words are instructive in light of deep concern about this subject two decades later. He said:

> In basic science, the motivation is always for the most complete publication that will ensure the payoff, or recognition of the contribution of the individual scientist and his reward for eponymic fame, Nobel Prizes, or similar honors, or at least by appreciation. In technological R&D, with profit or military ascendancy substituted largely for honor, the effort is toward publication only as an epiphenomenon, not as an end product.

Dr. Shannon, Director of NIH, was the last speaker of the panel on recognizing technical information needs. He admitted that he did not see the problem as grave as others saw it, at least in the biomedical area. He was concerned that the problem was being expressed in terms that were too broad; there could be differences in the extent of the

problem being encountered by physical scientists and engineers as contrasted to biomedical scientists and physicians. He felt that dramatic remedies in solving an unspecified STI problem were uncalled for, and that gradual evolution that accepts the new technology is preferable to a revolution that might disavows and destroys communication operations and traditions. He said he was reassured with a report of the Division of Medical Sciences of the National Academy of Sciences, National Research Council, which called for a low key posture for the future. He pointed out that biomedical literature is open and available in the open market. He discussed the role of the National Library of Medicine and many large dispersed repositories. NLM and its predecessors had been publishing indexes to this body of literature since 1879, indexes that are constantly expanding to include cognate life sciences. The computer has been employed to improve the indexes and their searching. The system, including the indexes, work for the scientists. This is a different picture than the one involving unpublished technical reports that are the fashion in other agencies. Moreover, the biomedical research community is almost totally unacquainted with the technical literature so familiar to DOD, NASA, and AEC and institutions oriented to their information products. What the bioscientist uses is the traditional scientific publication as a matter of practice and tradtion. There is no announced quality ranking of biomedical journals, but a broad consensus obtains on rank ordering in each field. In our field, we have learned to live with the publish or perish syndrome. I hope we never establish a counterpart in the technical report field, but we recognize that there is room for improvement in the more traditional area. Publication is being delayed in trying to maintain quality, but we have to try harder. You should also recognize how important informal communications are in the biomedicine and health fields. We encourage many conferences and meetings to accelerate face to face interaction. We do not agree that meetings have become so big that they have lost their value. We are not certain that the restricted "invisible colleges" are the best way to go; the information exchanged in these groups ought to be more generally available. I agree that too many poor papers are being written and that steps are needed to cut back on them. Unfortunately, documentalists have no choice - every paper is equal in value to them. It is probable that the need to balance the Federal

budget and the dimunition of the cold war will reduce the rate of growth of manpower in the physical scientists. In that case the notion of an information explosion will disappear and with it the need for drastic new alternative solutions. We have, in our field, plenty of reviews, but not enough critical reviews. Too little is being done to mainatin an ethic that exposes the shoddy, the vacuous, the trivial, and the tasteless (literature). There is a necessity for improved management systems and better data handling and analysis. There are two problems that I have encountered in trying to improve management information systems. One is the classification problem at the technical level. The human problem is worse; the reluctance of my staff members to grapple with these problems on philosophical grounds, and their assertion that many apparently legitimate managerial problems are unanswerable in any absolute and systematic way gives me some pause. The concern is that they are prepared to make decisions of far-reaching consequence upon data that is of extremely limited meaning.

Two other concerns. One is the systematization of processes to get research information reapidly into the hands of our ultimate consumers - physicians - to be applied to the maintenance of health and the elimination of disease. This problem is uniquely related to the Public Health Service's mission, but has many aspects analogous to those encountered in informing the practicing engineer. The other is in providing useful information to the public. This latter is a difficult and serious one, and the stakes are high. The national effort in biomedical reearch is currently heavily dependent upon Federal funds and is likely to continue so. This means that the soundness of national policies will depend in large measure upon the extent to which the citizenry and their representatives in Congress are informed about science. I feel a grave obligation to be heavily engaged in the task of educating the several "publics" in the dynamic and evolving aspects of biomedical science. This task, considering the variety of backgrounds represented in the "student body," is formidable. But it needs doing and doing well.

The reader should recognize that at the time this book is being written - 1983 and 1984 - what there is left of the original Federal STI thrust of the late 1960s and the decade of the1960s, much of focus of the day is on dissemination of Federal R&D results and how to balance the outflow without "giving away valuable knowledge" to rivals and enemies."

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A reading of "Technical Information and the Federal Laboratory" reveals that while dissemination and its protection are given attention, the major stress is on the management and handling of information as a tool to improve Federal research and development. The shift is unfortunate, because it has resulted in moving the matters of STI from the central to a side ring of less concern to the scientists and engineers. With the shift has come a loss of interest and identification among the R&D managers and the scientists and engineers that continues today. The Science Advisor, Don Hornig, and the Executive Secretary of the Federal Council for Science and Technology, Ed Wenk, during the 1960s would hardly recognize the loss of direction, nor appreciate it. The publication also depicts the battle going on between those who welcomed the arrival of organized Federal STI programs as an opportunity and evidence of Federal government leadership and responsibility and those who felt less comfortable with the emergence of the technical literature as a bedfellow of the refereed scientific journal, fearing that science communications would be debased. Dr. Shannon's remarks were particularly useful in defending the old while calling for improvements that were long overdue. His recognition of the defects of information management in his own NIH setting and the reluctance of his staff to grapple with the improvements needed are still true two decades later.

Dr. Edward Wenk, the Executive Secretary of FCST, made a few cogent comments worth recording about the role of FCST. In his view it was more important for FCST and COSI to worry less about the identification of the overall problem and to do more about solving the defects of the system. He said:

> It is worth while recalling that because the Federal Government is a sponsor of 70 percent of the R&D undertaken in this country, as measured by dollars, it indirectly or directly sponsors the production of the scientific and technical papers that we are talking about. It is also concerned with the management of its scientific and technological resources...To get more bang for the buck, the Federal Government has a very strong motivation for inquiring into those processes which greatly influence the effectiveness of the enterprise. Then, too, the Federal Government must be sensitive to its impact on the non-Governmental community. It is quite clear that the policy and the program decisions by the Federal Government impinge upon all of our private laboratories, on our universities, on our private laboratories, non-profit laboratories, and insofar as science and technology is concerned, on the activities of our State and local governments. Our very strong science and technology enterprise is largely publicly funded while privatedly performed. Close to 75 percent of the Federal funds are spent outside the Federal Government.

Another significant environmental factor is the pace at which new discoveries are being converted into military hardware and other products and processes. Formal disciplines are now being blurred, and the osmosis that has taken place between the boundaries of the conventional disciplines challenges the strength of the disciplines themselves. We find also a curious paradox in that we in the government operate within a Federal departmental structure, but it is a structure that was never designed to implement the advance of science and technology. It is a departmental structure which itself cannot be changed as rapidly as demands are placed upon it. And finally, it is a departmental structure that at least now in no way coincides with the structure of science and technology. These factors require the identification of new mechanisms and new concepts by which the Federal Government can be nimble in its reflexes to meet new problems and think through the new solutions in the context of those environmental conditions that I have suggested.

In so doing, I think it is important as it relates to science information to consider the diversity of clientele. Information is thought of as being generated by the scientific community and used by the scientific community; but in great measure, insofar as the Federal Government is concerned, we are interested in its application to solve a problem. We are much aware of the technological motivation for the support of research in the first instance. One measure of the effectiveness of an information system is the extent to to which it brings about improvements in our performance. The technological part of our community therefore is an important participant in the "science information" enterprise. So are the administrators, and so are those who make policy in the executive branch and laws on Capitol Hill...The mechanism which is being employed most directly insofar as science information is concerned is FCST....The important thing, I believe, is to see how a new mechanism, in this case an interagency body, has been given enough in the way of responsibility to get its job done. Those of us in OST who have responsibilities for coordination are basically skeptical about how far one can go and how much can expect from interagency committees. In the history of government they do not enjoy good reputations. By and large, it is said that they end up by being mutual back-scratching societies in which any agreement boils down to a least common denominator. But the performance of the Council has given us some optimism about interagency mechanisms. The reason is not easy to determine. In the first instance, I think it fair to say that the FCST's effectiveness depends a great deal upon the fact that its Chairman is in close proximity to the President, and the role that he plays as Special Assistant to the President definitely gives the Federal Council an opportunity to fulfill some of its aspirations. Secondly, the committees that have suceeded with FCST are distinguished by leadership of their chairmen and by good staff work. Thirdly, to some extent, those who operate within the FCST mechanism have been able to overcome the parochialism that places agency status above that of the total government...No longer can one agency in the field of science and technology depend solely on its own sponsored R&D activity. In almost every field the agencies now make use of research undertaken by a sister agency. Objectives in such areas as oceanography, water research, atmospheric sciences. As these fields do not correspond to the missions and role of any single agency, therefore their accomplishment is going to require the contributions in concert of a number of agencies.

The Committee on Scientific and Technical Information is one of the instruments of the Federal Council. Its charter is broad. It identifies the science information problems which are of interest to all the participating agencies in FCST, undertakes staff studies of a substantive nature, and brings specific proposals and recommendations to the Federal Council for deliberation by the members and, if possible, a consensus.

Dr Wenk goes on to explain how FCST gets its work done:

> The point here is that the forum of the FCST includes senior policy level officials from the agencies who, if they agree to a policy action, carry with it an implication of commitment for support in their own agencies. It is important to recall that the Bureau of the Budget sits as a very active observer in these proceedings. Another important quality of FCST is that it provides a network of communication, and this network is both horizontal and vertical. It is a reciprocal network, wherein actions taken by the Council can be proptly translated into action within the agency. The Council is source of ideas from with the agency itself, from those of you in Government who have operating responsibilities and who can synthesize principles and aspiration, and some practical realities of getting the job done....There is going to be a new emphasis on the manner in which this enterprise can contribute to our economic and social needs, and this means a much broader and direct involvement of our Federal structure and our laboratories with the institutions outside...

While the symposium venture undertaken by FCST was one of its last general and open programs in the STI area, since it depended on COSATI to carry on the function in subsequent years,but as long as Dr.Wenk and his successor Dr. Charles V. Kidd remained in their posts, the philosophy of Dr. Wenk, expressed above, prevailed. The Chairmen of COSATI were invited to attend the FCST meetings, give reports of COSATI's progress, and offer recommendations for FCST approval and agency implementation. An examination of the evidence reveals that COSATI was <u>one</u> of the FCST committees that followed the blueprint sought by the leaders of that council, and worked hard to accomplish the objectives of its charter.

A list of the attendees to the Second Symposium, held at the Goddard Space Flight Center, Greenbelt, Md. in 1964 is attached.

Attendance List [1]

Executive Office of the President

Office of Science and Technology

Mr. William L. Hooper, Technical Assistant, Washington, D.C.
Dr. J. Hilary Kelley, Technical Assistant
Dr. Edward Wenk, Jr., Executive Secretary, Federal Council for Science and Technology

Bureau of the Budget

Mr. J. Lee Westrate, Office of Management and Organization, Washington, D.C.

Department of State

Mr. Herbert Turner, AID, Washington, D.C.

Department of Defense

Office of the Secretary of Defense

Mr. Walter M. Carlson, Director of Technical Information, Washington, D.C.
Lt. Gen. Wm. J. Ely, Deputy Director (Administration and Management), Office of Director of Defense Research and Engineering, Washington, D.C.
Mr. Edward M. Glass, Special Assistant to the Deputy Director (Research and Technology), Washington, D.C.
Dr. Earl Hayes, Assistant Director (Materials), Washington, D.C.
Col. F. J. Frese, Chief, Life Sciences Division, OAD (R)
Mrs. Donna Spiegler, Office of the Director of Technical Information, Washington, D.C.

Department of the Army

Col. Andrew A. Aines, OCRD, Washington, D.C.
Dr. R. E. Clark, U.S. Army Research Institute of Environmental Medicine, Natick, Mass.
Mr. Oscar P. Cleaver, U.S. Army Engineer R&D Laboratories, Fort Belvoir, Va.
Dr. Riley D. Housewright, Scientific Director, U.S. Army Biological Laboratory, Fort Detrick, Md.
Dr. W. J. Kroeger, Director, Institute of Research, Frankford Arsenal, Philadelphia, Pa.
Col. P. G. Krueger, Deputy Director, U.S. Army Engineer R&D Laboratories, Fort Belvoir, Va.
Dr. Post Hallowes, Army Missile Command, Redstone Arsenal, Ala.
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Department of Defense—Continued

Department of the Army—Continued

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Department of the Navy

Dr. F. S. Atchison, Technical Director, U.S. Naval Ordnance Laboratory, Corona, Calif.

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Department of the Air Force

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Mr. James Clark, Air Force Flight Dynamics, Wright-Patterson Air Force Base, Ohio

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Dr. Eric von Ohain, Aerospace Research Laboratories, Wright-Patterson Air Force Base, Ohio

Dr. William J. Price, Executive Director, Air Force Office of Scientific Research, Office of Aerospace Research, Washington, D.C.

Mr. Robert Roalef, Air Force Avionics Laboratory, Wright-Patterson Air Force Base, Ohio

Mr. Don Ross, Air Force Rocket Propulsion Laboratory, Edwards, Calif.

Brig. Gen. James T. Stewart, Director of Science and Technology, Washington, D.C.

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Defense Atomic Support Agency

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Defense Intelligence Agency

Mr. Charles Hunt, Research and Development Office, Washington, D.C.

Department of the Interior

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Department of the Interior—Continued

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Mr. Allan Sherman, Bureau of Mines, Washington, D.C.

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Department of Agriculture

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Dr. E. C. Elting, Deputy Administrator, Agricultural Research Service, Washington, D.C.

Mr. K. R. Fitzsimmons, Agricultural Research Service, Washington, D.C.

Dr. George W. Irving, Jr., Deputy Administrator, Utilization R&D, Agricultural Research Service, Washington, D.C.

Dr. George M. Jemison, Forest Service, Washington, D.C.

Mr. Foster E. Mohrhardt, Director, National Agricultural Library, Washington, D.C.

Dr. E. G. Locke, Director, Forest Products Laboratory, Madison, Wis.

Dr. M. W. Parker, Chief of Crops Research Division, Beltsville, Md.

Dr. W. T. Pentzer, Director, Market Quality Research Division, Agricultural Marketing Service, Hyattsville, Md.

Dr. P. A. Wells, Director, Eastern Utilization R&D Division, Agricultural Sesearch Service, Philadelphia, Pa.

Library of Congress

Dr. Dwight E. Gray, Chief, Science and Technology Division, Washington, D.C.

Mr. John T. Stearns, Chief, National Referral Center for Science and Technology, Washington, D.C.

Dr. C. Edward Wise, Jr., Senior Specialist in Science and Technology, Washington, D.C.

Department of Commerce

Dr. A. V. Astin, Director, National Bureau of Standards, Washington, D.C.

Mr. George Auman, Assistant Director, National Bureau of Standards, Washington, D.C.

Dr. Lewis M. Branscomb, Joint Institute of Laboratory Physics, Boulder, Colo.

Dr. Ezra Glaser, Assistant Commissioner of Patents, Washington, D.C.

Mr. J. W. Herbstreit, National Bureau of Standards, Boulder, Colo.

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Department of Health, Education, and Welfare

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Department of Health, Education, and Welfare—Continued

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Dr. James A. Shannon, Director, National Institutes of Health, Washington, D.C.

Dr. William H. Stewart, Assistant to the Special Assistant to the Secretary (Health and Medical Affairs), Washington, D.C.

Atomic Energy Commission

Mr. Edward J. Brunenkant, Director, Division of Technical Information, Washington, D.C.

Dr. Charles Falk, Brookhaven National Laboratory, Upton, Long Island, N.Y.

Dr. Jack Vanderryn, Office of the Assistant General Manager for R&D, Washington, D.C.

Federal Aviation Agency

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National Aeronautics and Space Administration

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National Science Foundation

Dr. Burton W. Adkinson, Head, Office of Science Information Services, Washington, D.C.

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Dr. Monroe Freeman, Director, Science Information Exchange, Washington, D.C.

Mr. Philip Ritterbush, Assistant to the Director for Scientific Affairs, Washington, D.C.

Veterans' Administration

Dr. Marc J. Musser, Assistant Chief Medical Director for Research and Education in Medicine, Washington, D.C.

Special Guest Speakers and Panelists

Dr. Stanley Lippert, Douglas Aircraft Co., Santa Monica, Calif.

Prof. Floyd C. Mann, Institute for Social Research, University of Michigan, Ann Arbor, Mich.

Dr. Frank C. McGrew, Director, Research and Development Division, E. I. du Pont de Nemours & Co., Wilmington, Del.

Dr. Derek J. De Solla Price, Chairman, Dept. of History of Science and Medicine, Yale University, New Haven, Conn.

Dr. Calvin W. Taylor, Psychology Department, University of Utah, Salt Lake City, Utah.

Dr. Alvin M. Weinberg, Director, Oak Ridge National Laboratory, Oak Ridge, Tenn.